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DISCUSSION AND CORRESPONDENCE

ERRONEOUS GENERIC DETERMINATIONS OF BEES

THE history of almost any considerable group will show that a subgenus is only a suppressed genus. In an introduction to Wilson's "American Ornithology," 1852, T. M. Brewer makes the following statement which gives an anachronistic setting to recent protests:

I have also judged it inexpedient to imitate the needless subdivisions into genera, which is the prevailing fault in modern ornithology. Without entering into a discussion of this controverted question, I have only to urge, in defense of my adhesion except in such instances as it appeared to be wrong to do so, to old genera—my conviction that the present mode of subdivision, instead of tending to simplify science, as its advocates assert, but adds to the difficulties of the beginner, and serves to discourage his efforts to master the subject.

In a synopsis at the end of this work, for example, all of the hawks and eagles are referred to *Falco* and the owls to *Strix*. The subgenera mentioned there are now recognized as genera and some of them have been subdivided into genera.

Primitive people, ignorant and stupid people, old fogies and beginners prefer large genera. But of all the people who use language the taxonomists known as "lumpers" are the only ones ever known to object to the formation of categories. A new genus is like vice, "a monster of so frightful mein." It is first an "alleged genus," then a subgenus, then a genus. In a large genus, if you can distinguish a group of species by any distinct characters, name the group. If you only point out the characters, some one else will name your group for you. In 1802 Kirby subdivided the bees into *Apis* and *Melitta,* but he separated them into many groups, not named but designated by signs. In the same year, and later, Latreille named many genera which were practically identical with the groups distinguished by Kirby. Since that time students of bees have been slow to take Kirby as a warning and Latreille as an example.

Confusion regarding genera results from the efforts of conservatives to force the conceptions associated with the theory of special creation upon those who accept the scientific theory of evolution. Under the former view genera were originally distinct. Under the latter view they were originally connected by transitional forms. The most distinct genera occur in old groups which have been broken into widely separated fragments by a process of extinction which has destroyed most of the original forms. The transitional form may be one of several things, but suppression of a genus on account of it usually involves an argument based on exceptions. If two genera containing many species could be separated all over the world, the lumpers would suppress one of them on account of a transitional form in *Ogygia.* The absurdity of suppressing groups on account of transitional forms is shown in the case of large and plastic assemblages where the more categories are needed the more they are suppressed.

Generic determinations should be made by comparing each species with the type of the genus. If a species differs in structure from this type, the determination is probably erroneous. A species may be referred to a given genus on account of its resemblance to the type or in spite of its differences. Often the type of the genus has never been ascertained and determinations are made by comparing with species which have been referred to it without any careful examination.

As a criterion for erroneous generic determinations, about all that can be done is to base inferences upon what the history of nomenclature shows. Accordingly we may take it for granted that genera will be subdivided in the future as in the past. Large genera in orders which have been neglected will be subdivided so that they will contain as many species as in orders which have been more thoroughly studied.

Smith's catalogue of the insects of New Jersey, the catalogue of the hymenoptera of Connecticut, local insects taken on flowers and the entomophilous flowers on which they were taken show the following averages of the spe-

cies for each genus. The genera of bees given in the New Jersey and Connecticut lists are those recognized by Viereck, but his views correspond with, and were probably somewhat determined by those of Cockerell, Crawford, Swenk, Sladen, Lovell and Ellis. While these authors might have different views in a few cases, the difference would hardly affect the averages.

	Species	Genera	Average
New Jersey, 1910:			
Hemiptera	504	205	2.4
Lepidoptera	2,120	715	2.9
Coleoptera	3,092	1,079	2.8
Diptera	1,661	542	3.0
Non-aculeate Hym	1,078	408	2.6
Lower Aculeata	452	99	4.5
Total	8,907	3,048	2.6
Bees	250	34	7.3
Genera suppressed		18	4.8
Connecticut, 1916:			
Non-aculeate Hym	1,819	481	3.7
Lower Aculeata	361	118	3.0
Total	2,180	599	3.6
Bees	231	35	6.6
Genera suppressed		31	3.5
Carlinville:			
Hemiptera	21	18	1.1
Lepidoptera	95	71	1.3
Coleoptera	137	82	1.6
Plants	437	261	1.6
Diptera	403	234	1.7
Non-aculeate Hym	126	74	1.7
Lower Aculeata	209	84	2.4
Total	1,428	824	1.7
Bees, R., 1918	296	98	3.0
Ashmead, 1899	296	50	5.9
Cockerell, 1918	296	45	6.5
Cresson, 1887	296	38	7.7
Dalla Torre, 1896	296	32	9.2

The table shows that, as regards genera, the lower aculeate hymenoptera and the bees have been neglected. Even 98 genera are conservative. On the analogy of the 1,428 species of other groups the 296 local bees should be referred to about 174 genera. The 250 New Jersey bees ought to be referred to about 96 genera, and the 231 Connecticut bees to 88 genera.

From the table we may presume also that when the number of species to the genus averages more than 1.7 for a locality like Carlinville, or more than 2.6 for a region like New Jersey, the generic determinations are erroneous. The table also establishes the presumption that the genera of bees suppressed in the New Jersey and Connecticut lists were suppressed erroneously. If the genera mentioned and suppressed in the two lists were used the average would be 4.8 for New Jersey and 3.5 for Connecticut.

To avoid the conclusion that these generic determinations are erroneous it is necessary to show that the genera in the other groups are not correctly determined, or that the bees differ from all of the other groups in a lack of characters on which generic distinctions can be based.

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THE NECESSITY FOR BETTER BOOK AND NEWSPAPER MANUFACTURE WITH RESPECT TO MATERIALS USED

OWING to the effects of the present war many of our productions have suffered greatly in quality. Manufactures of all kinds that, five years ago, were as fine in all particulars as the world has ever seen turned out anywhere, have now depreciated to such an extent, in proportions and quality, that one would hardly believe, without due comparison, what an enormous falling off there has been in many instances. It has affected the output of nearly every one of our best industries, with possibly the exception of the manufacture of war munitions, war materials, and some others too well known to mention. There are thousands of newspapers published in this country. Some of the wealthier ones do not seem to have suffered much, while in the case of the majority of the smaller sheets, they have not only shrunk in the matter of their size and number of pages, but the materials used in their manufacture, notably the paper and ink, are so poor in quality that the paper, in an incredibly short space of time, becomes more or less brittle, yellow, and blotchy, all of which are but premonitory symptoms of a crumbling away—a condition that proceeds